

# The Erlangen CRM.

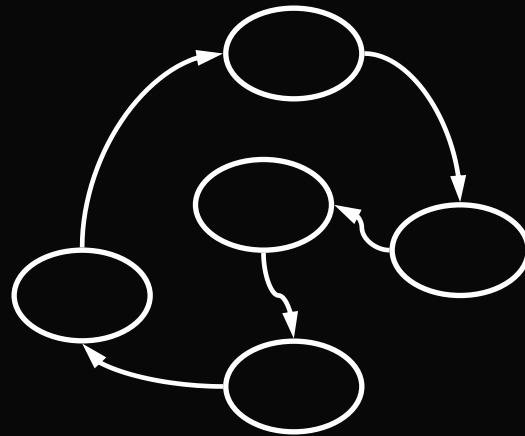
An OWL DL ontology for the practical use of the CIDOC CRM.

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# ὄν λόγος

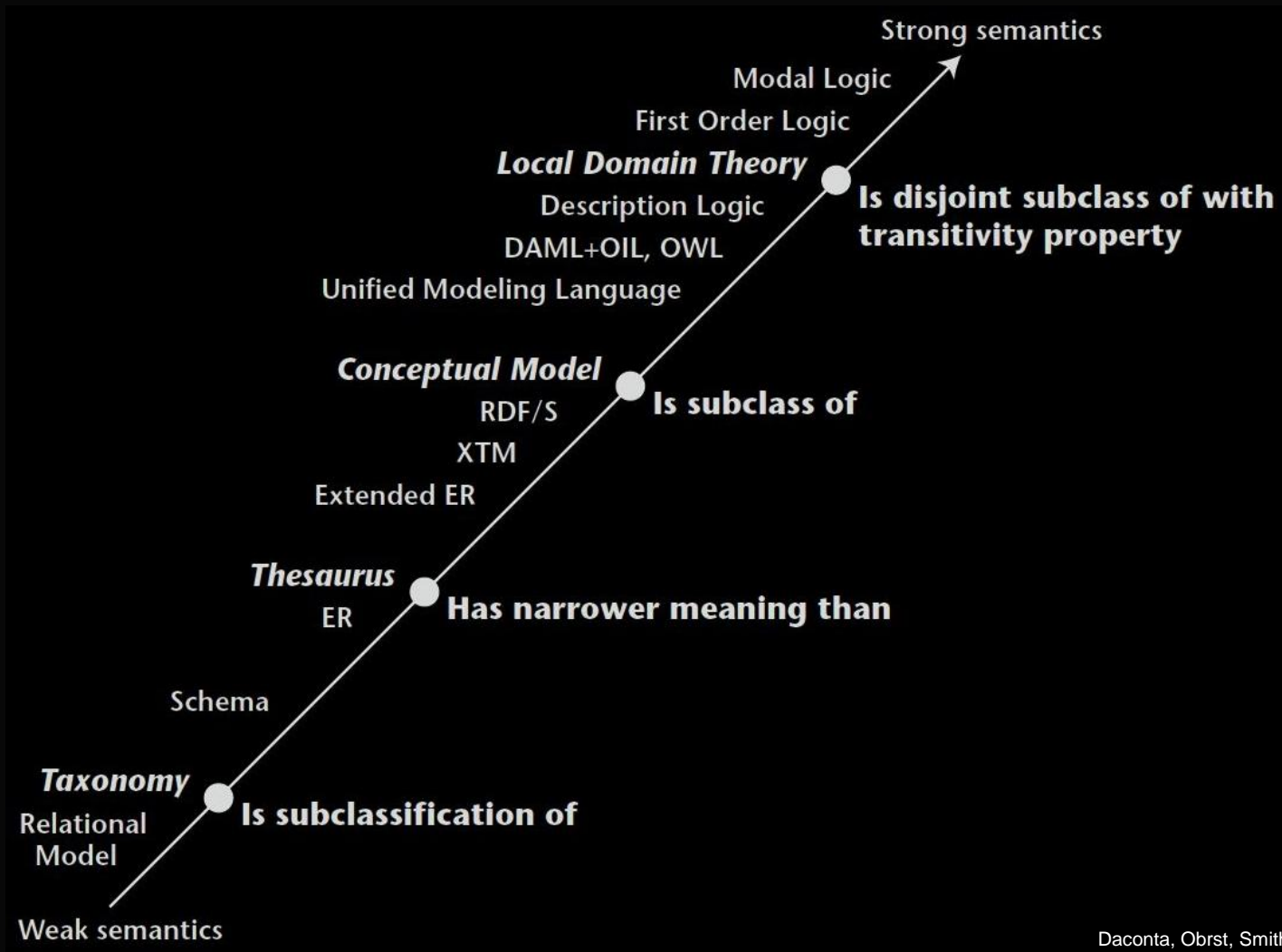


- „An ontology is an explicit specification of a conceptualization.“

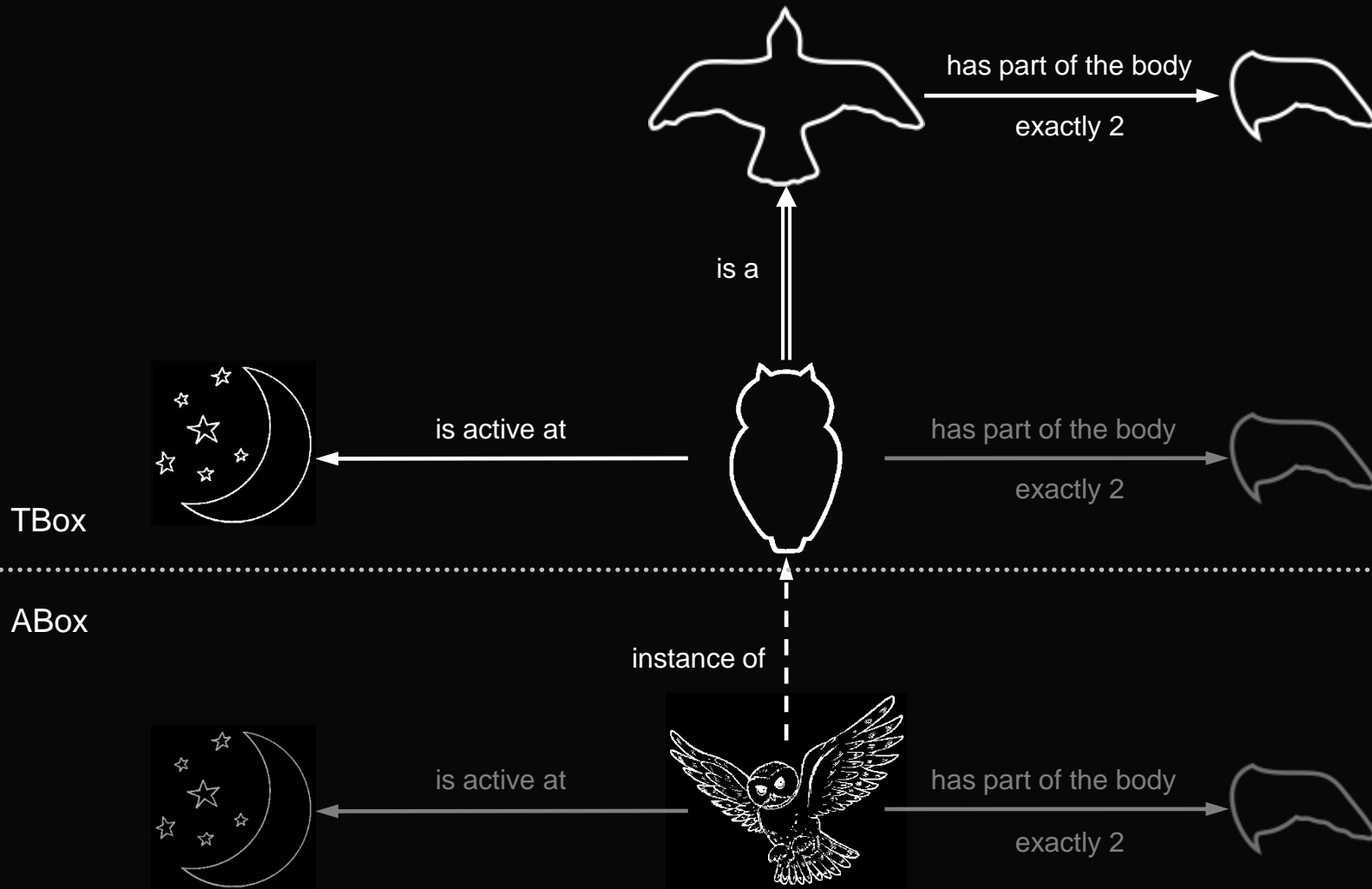
Gruber (1993):  
A Translation Approach to Portable Ontology Specifications.

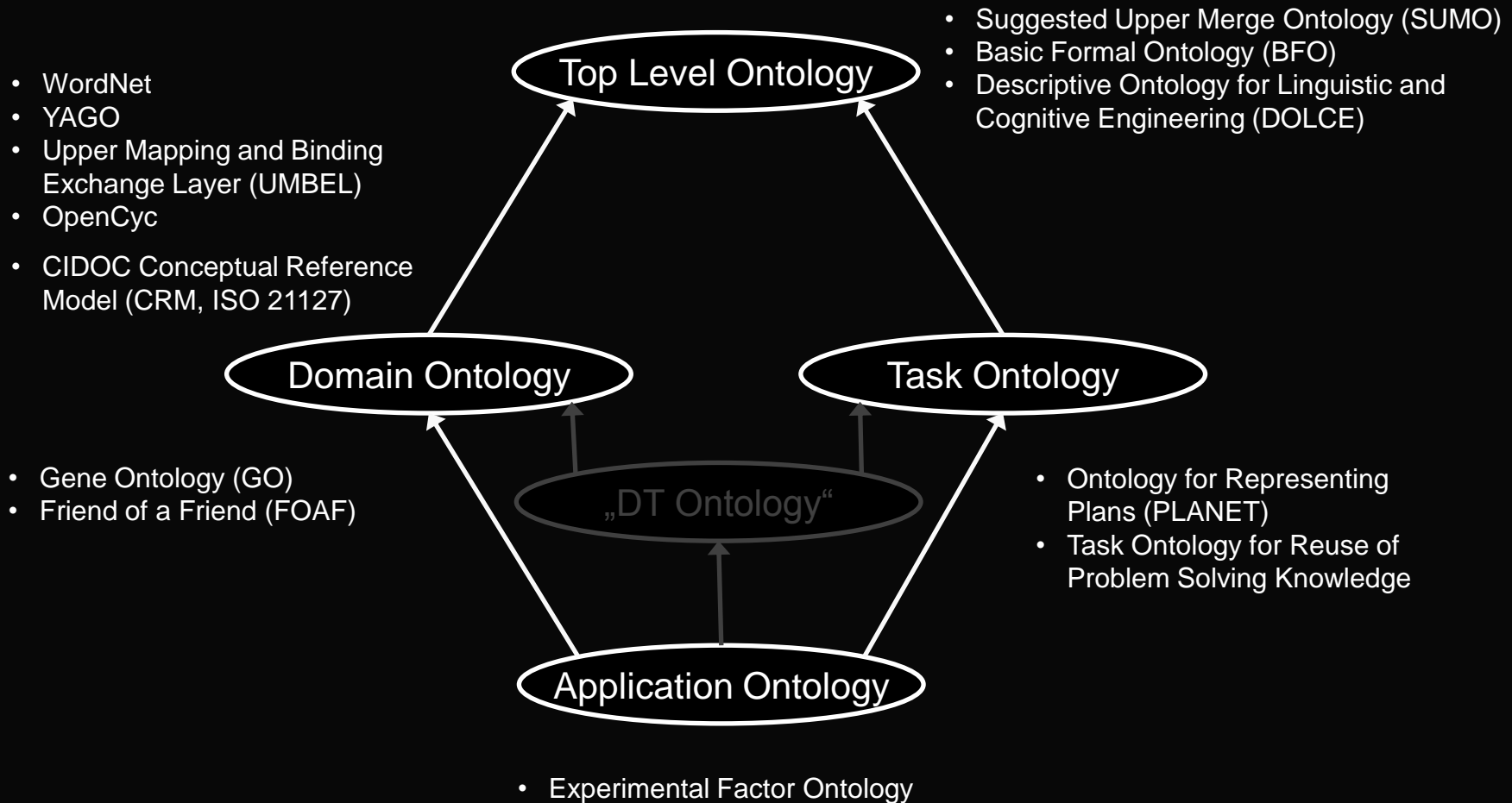
- An ontology is a formal, explicit specification of a shared conceptualization.
  - *Conceptualization* refers to an abstract model of some phenomenon.
  - *Explicit* means that the types of concepts used, and the constraints on their use are explicitly defined.
  - *Formal* refers to the fact that the ontology should be machine-readable.
  - *Shared* reflects the notion that an ontology captures consensual knowledge, that is, it is not private of some individual, but accepted by a group.

Studer, Benjamins, Fensel (1998):  
Knowledge engineering. Principles and methods.



Daconta, Obrst, Smith (2003):  
The Semantic Web.





Guarino (1998):  
Formal Ontology and Information Systems.

The CIDOC CRM

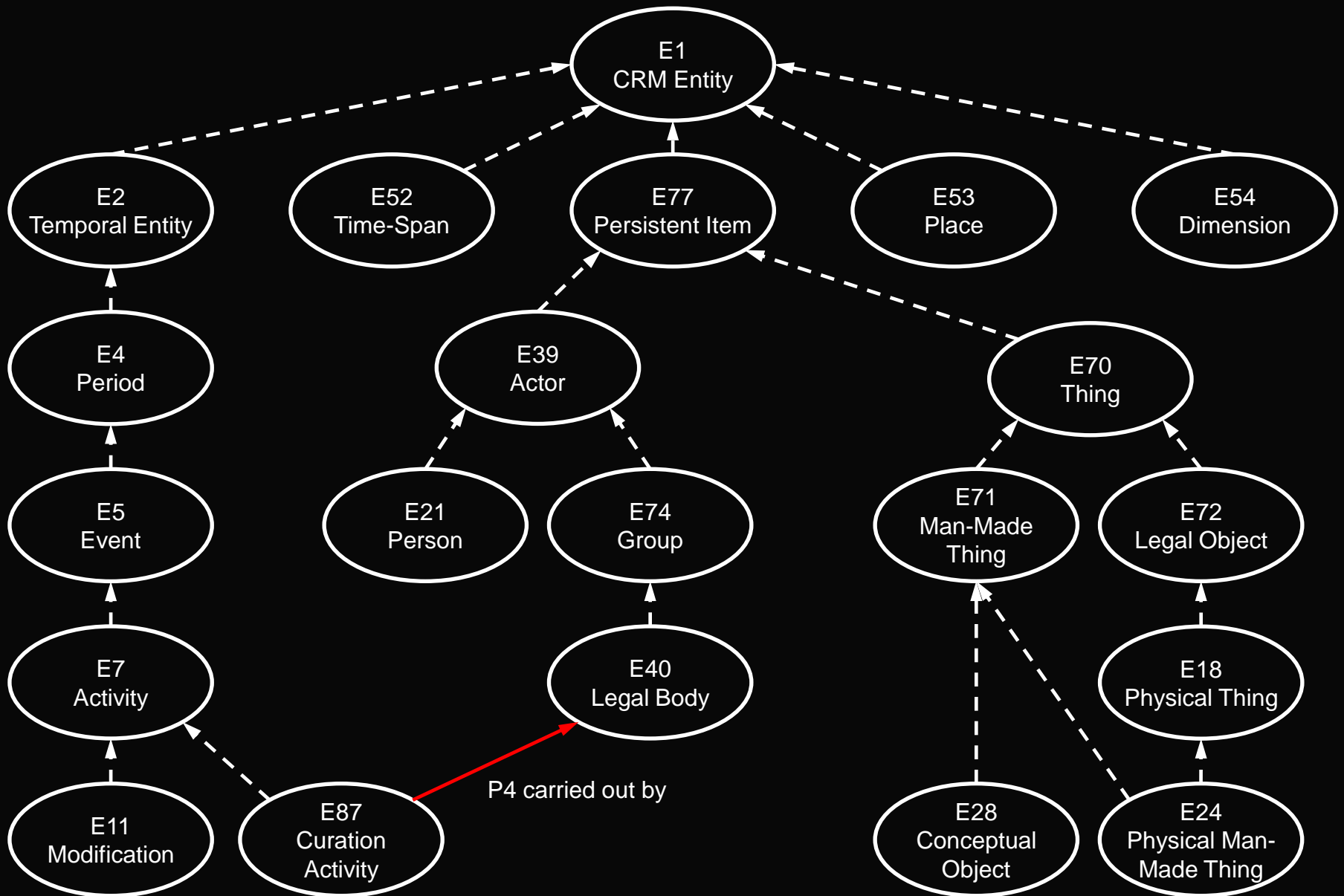
*An ontology for cultural heritage*

- “[A] formal ontology intended to facilitate the integration, mediation and interchange of heterogeneous cultural heritage information.”

Crofts, Doerr, Gill, Stead, Stiff (2011):  
Definition of the CIDOC Conceptual Reference Model. Version 5.0.2.

- Developed and maintained by the *CIDOC CRM Special Interest Group (CRM SIG)* of the *Comité International pour la documentation (CIDOC)* of the *International Council of Museums (ICOM)*
- ISO 21127:2006 (= Version 3.4.9)
- Recent version: 5.0.4



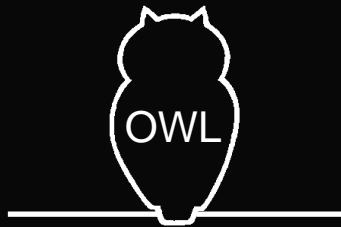


- As controlled vocabulary
  - Supports the mapping between incompatible databases
  - Supports the communications between computer scientists and expert scientists in cultural heritage
- As a blueprint for metadata schemes and databases
  - GNM Document Management System (DMS) at the Germanische Nationalmuseum
  - Lightweight Information Describing Objects (LIDO)  
<http://www.lido-schema.org>
- As a formal (reference)ontology
  - Erlangen CRM (<http://erlangen-crm.org>)

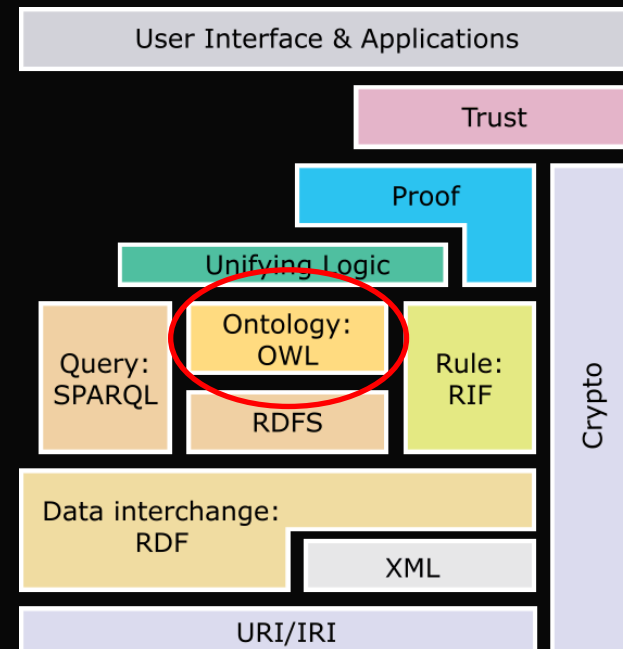
The image shows a screenshot of the CIDOC CRM website on the left and the cover of the 'Definition of the CIDOC Conceptual Reference Model' document on the right. The website header includes the ICOM logo and the text 'The CIDOC Conceptual Reference Model'. A navigation bar contains links for Home, The CIDOC CRM, Activities, People, and Resources. The main content area is titled 'CIDOC CRM Home page' and includes a search box, a 'Current Page: What is CIDOC CRM' section, and a sidebar with links like 'Who we are', 'Sitemap', 'WIKI Forum', 'Official Release', and 'What's New?'. The document cover on the right features the ICOM logo, the title 'Definition of the CIDOC Conceptual Reference Model', production information, the version '5.0.4' dated 'November 2011', editors' names, and a copyright notice. A PDF icon is overlaid on the bottom center of the screenshot.

The Erlangen CRM:

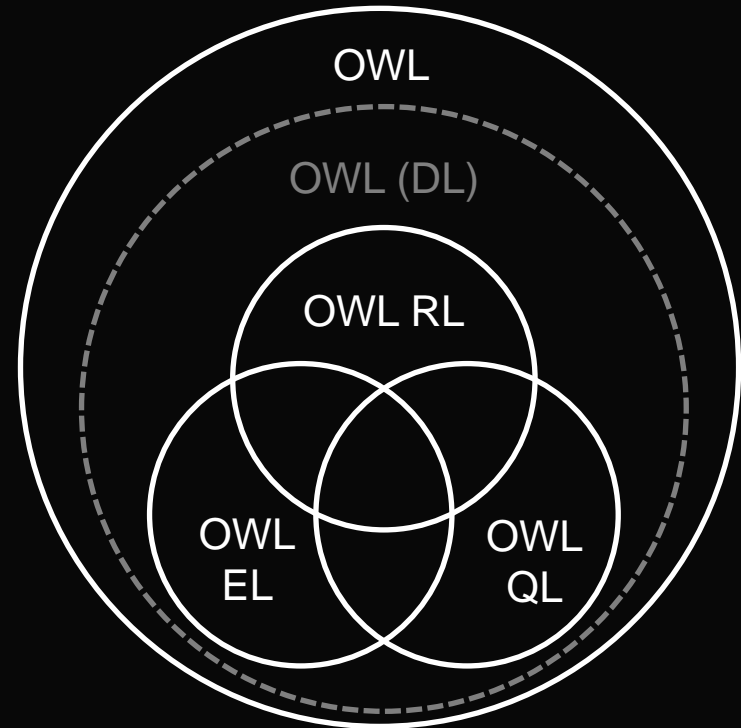
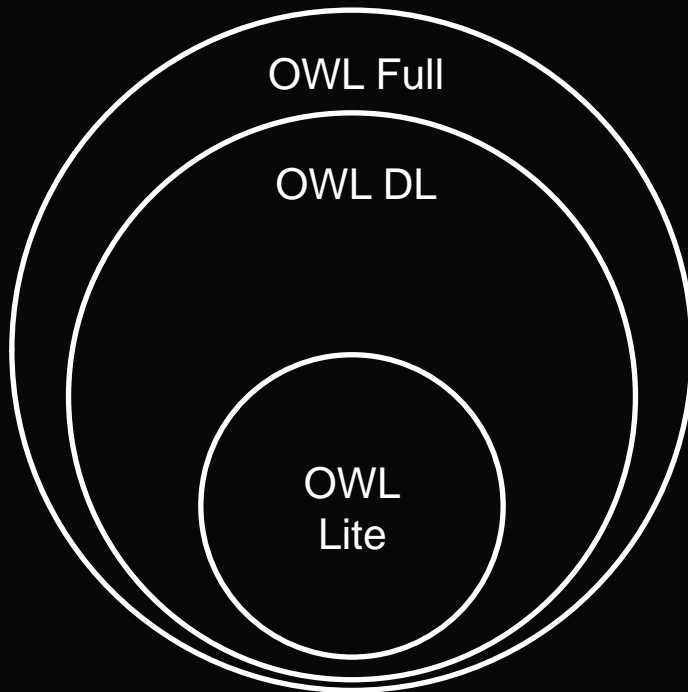
*From paper to formal language*



- Web Ontology Language
- Important part of the Semantic Web Initiative
- More expressive power than RDF Schema (= „more semantic“)
- Developed since 2002
- Open World Assumption
- No Unique Name Assumption



<http://www.w3.org/2007/03/layerCake.svg>





- Developed since 2008
- The only actively maintained OWL DL version of the CRM
- Enables the use of the CRM on the semantic web
- Takes every facet (e.g. Disjoints) of the CRM into account
- Provides a versioned namespace for integrity of semantics
- Gives advice on how to use the model



### *About*

The **Erlangen CRM / OWL** is an **OWL-DL 1.0** implementation of the **CIDOC Conceptual Reference Model (CIDOC CRM)**.

It has been originally created by Bernhard Schieman, Martin Oischinger and Günther Görz at the **Friedrich-Alexander-University of Erlangen-Nuremberg, Department of Computer Science, Chair of Computer Science 8 (Artificial Intelligence)** in cooperation with the Department of Museum Informatics at the **Germanisches Nationalmuseum Nuremberg** and the Department of Biodiversity Informatics at the **Zoologisches Forschungsmuseum Alexander Koenig Bonn**. It is currently maintained by Martin Scholz, Georg Hohmann and Mark Fichtner.

The Erlangen CRM / OWL is an interpretation of the CIDOC CRM in a logical framework attempting to be as close as possible to the text of the specification. For information about the CIDOC CRM and related work please visit the corresponding **CIDOC CRM website**. The CRM is also available as **ISO 21127**.





### *Current Version*

- Erlangen CRM 120111  
based on CIDOC CRM 5.0.4

#### *Versioned Namespace*

- <http://erlangen-crm.org/120111/>  
[ [Direct Download](#) | [Protege 3.4.7 Project-File](#) | [Changelog](#) | [Documentation](#) ]

#### *Unversioned Namespace*

- <http://erlangen-crm.org/current/>  
[ [Direct Download](#) | [Protege 3.4.7 Project-File](#) | [Changelog](#) | [Documentation](#) ]

Note: We recommend to use the ECRM with the versioned namespace. Using a unversioned namespace means that a specific class or property would always be the same (in the sense of `owl:sameas`) no matter which version is used. However, this assumption is not valid if something **changes** in the definition of a class or property (new restriction, different range etc.) from one version to another. Nevertheless, if you are not interested in **automated reasoning** or unambiguous identifiers you can use this unversioned namespace to always refer to the most recent version of the ECRM.



### *Documentation*

- Erlangen CRM 120111: [OWLDoc](#) | [Ontology Browser](#)
- Erlangen CRM Current: [OWLDoc](#) | [Ontology Browser](#)
- Erlangen FRBRoo 120131: [OWLDoc](#) | [Ontology Browser](#)

OWLDoc = [OWL Documentation Plugin](#) for Protégé.

Ontology Browser = [Ontology Browser](#) at the University of Manchester.

### *Changelog*

- [Changelog of all ECRM versions](#) (since 2010)

### *Papers & Notes*

- Georg Hohmann, Martin Scholz (2011): [Recommendation for the representation of the primitive value classes of the CRM as data types in RDF/OWL implementations](#)
- Bernhard Schiemann (2009): [Proposal of a E52 Time-Span extension](#) (see also the [related discussion on the CRM-SIG-mailinglist](#))
- Martin Oischinger, Bernhard Schiemann, Günther Görz (2008): [Short](#)

The Erlangen CRM is used by various projects and initiatives:

## CLAROS

CLAROS is an international research collaboration, that enables simultaneous searching of major collections (mainly art of ancient Greece and Rome) in university research institutes and museums. The ECRM is used as a common ontology in the knowledge base and is extended with additional concepts and properties.

## Sharing Ancient Wisdoms

In the project Sharing Ancient Wisdoms (SAWS) the ECRM/EFRBRoo is used as the basis for an **ontology on medieval manuscripts**. The project focuses on 'gnomologia' manuscripts, which contain collections of wise sayings and moral advice, mostly written in Ancient Greek or Arabic, from the Middle Ages. RDF is used to model relations between/within manuscripts, to study the manuscripts' contents, seeing how different manuscripts relate to each other and to see the effects of transcribing or translating the manuscripts.



SYNAT is a Polish project that aims to create a universal and open platform for networking and communication of knowledge resources for science and education. The ECRM is used as the basic ontology for the underlying knowledge base, developed by the **Poznan Supercomputing and Networking Center**, which contains huge amounts of data from libraries, archives and



# Erlangen CRM / OWL

[About](#) [Current Version](#) [EFRBRoo](#) [Documentation](#) [References](#) [Contact](#)

## *EFRBRoo*

- Erlangen FRBRoo 120219  
based on FRBRoo 1.0.2 & ECRM 120111  
<http://erlangen-crm.org/efrbroo/120219/>  
[ [Protege 3.4.8 Project-File](#) | [Direct Download](#) | [Documentation](#) ]

## *Previous Versions*

- Erlangen FRBRoo 120131  
based on FRBRoo 1.0.2 & ECRM 120111  
<http://erlangen-crm.org/efrbroo/120131/>  
[ [Protege 3.4.7 Project-File](#) | [Direct Download](#) | [Documentation](#) ]

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University of Erlangen-Nuremberg | Department of Computer Science & Artificial Intelligence  
Germanisches Nationalmuseum | Department of Museum Informatics  
Zoologisches Forschungsmuseum Koenig | Department of Biodiversity Informatics

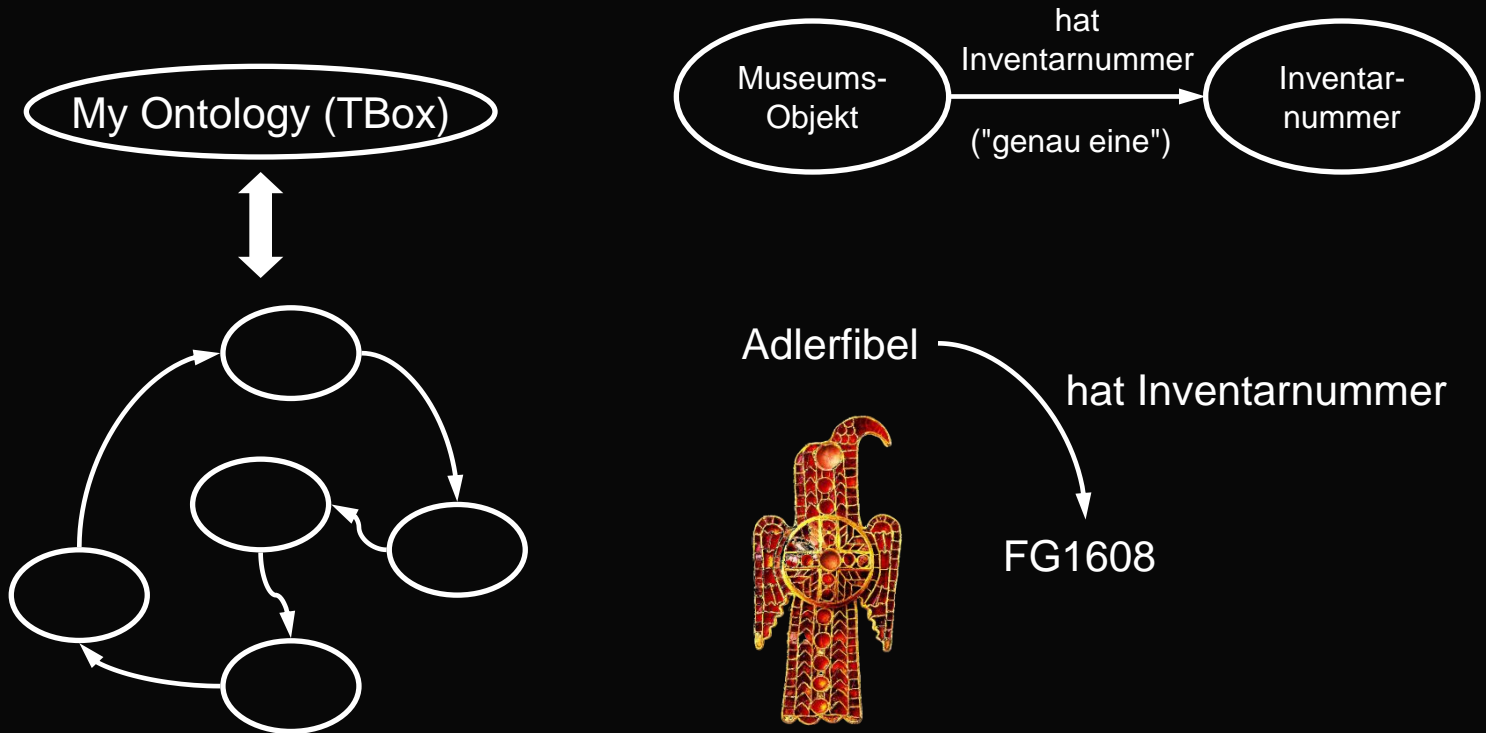


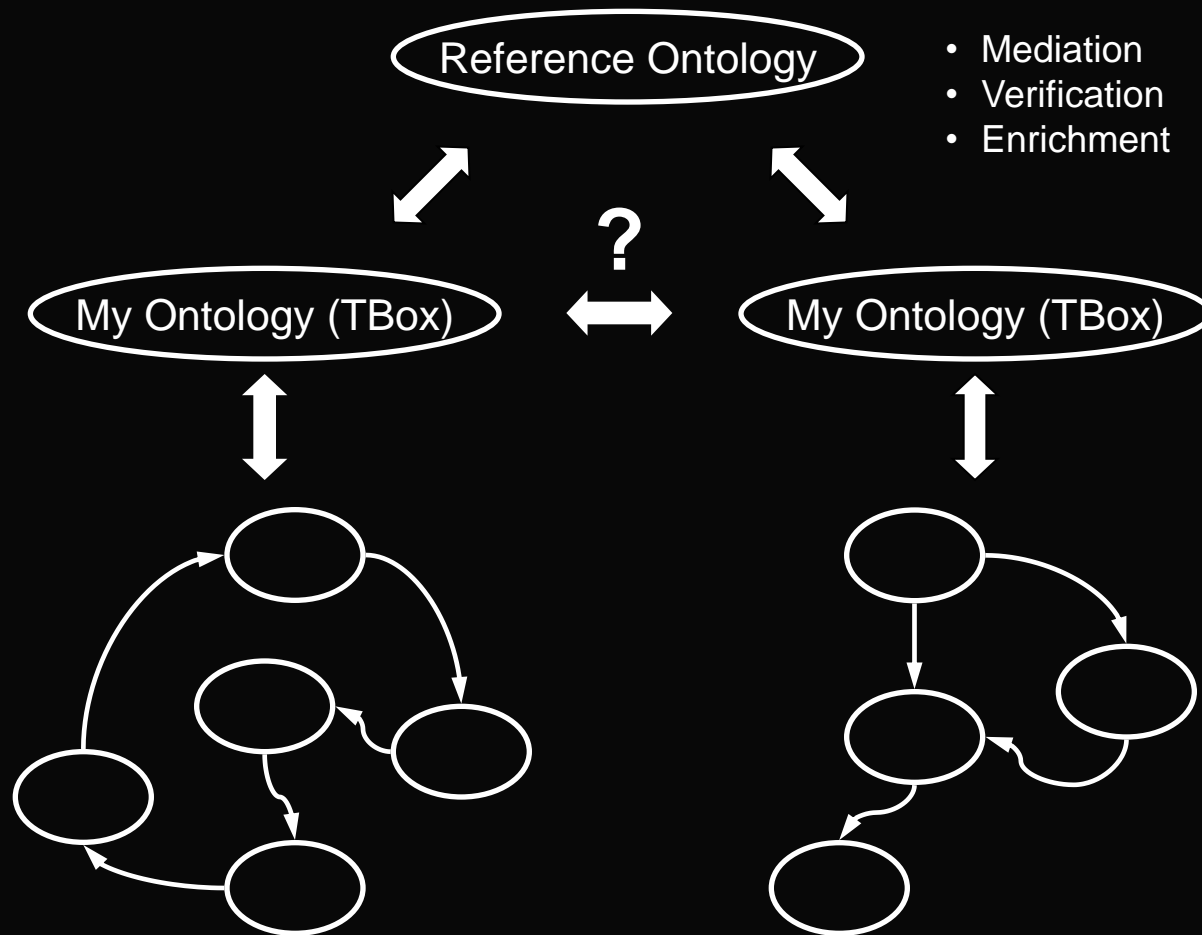
[Legal Notice](#)

- Tool support!
- Development Environments
  - Protege (<http://protege.stanford.edu>)
  - Altova SemanticWorks (<http://www.altova.com>)
  - ...
- Program Libraries
  - OWL API (Java, <http://owlapi.sourceforge.net/>)
  - ...
- Reasoner
  - Hermit (<http://hermit-reasoner.com/>)
  - Pellet (<http://clarkparsia.com/pellet>)
- Important step towards a real semantic web (Rules, Logic, Trust ...)

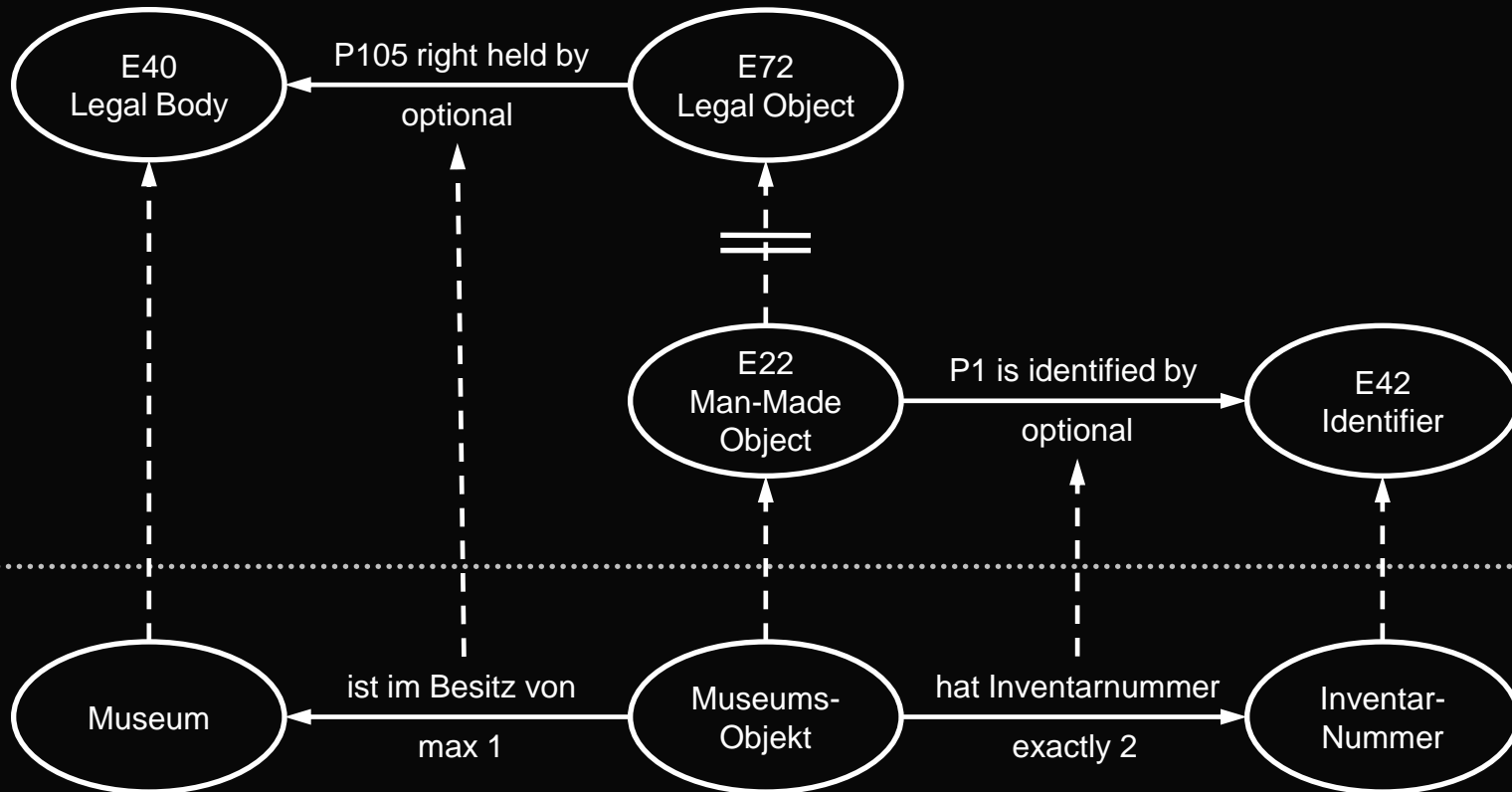
The CIDOC / Erlangen CRM:

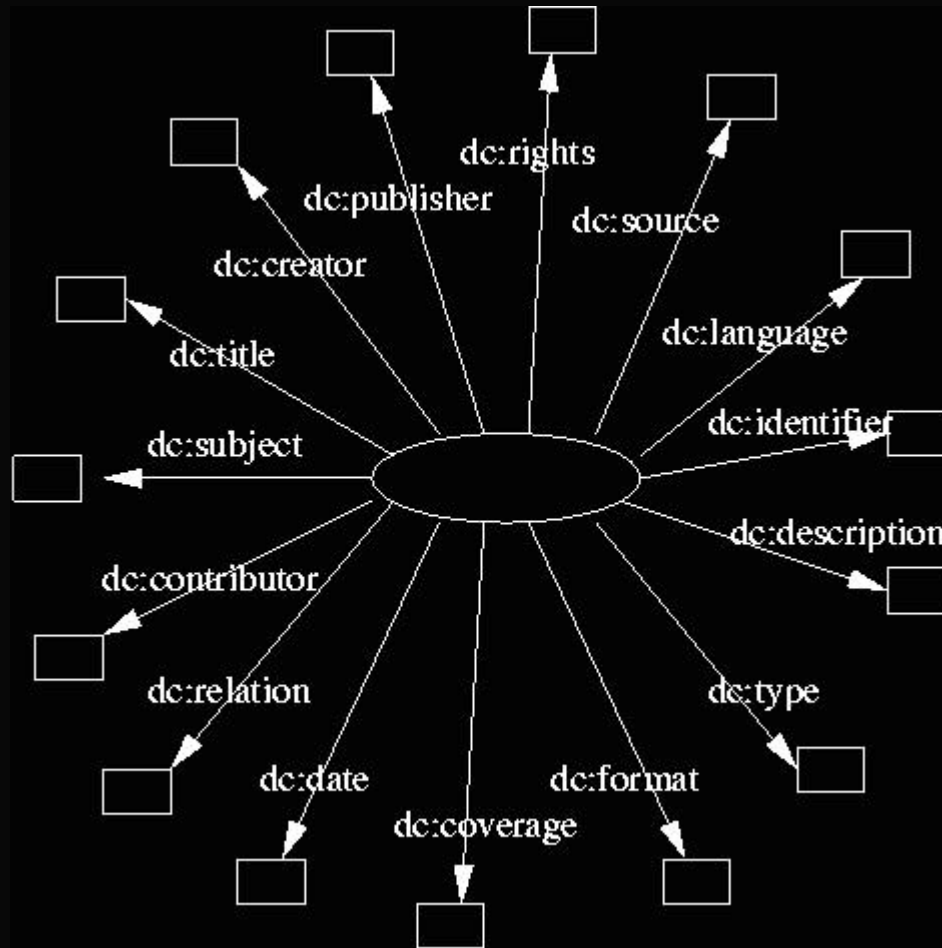
*Yet another metadata standard?*



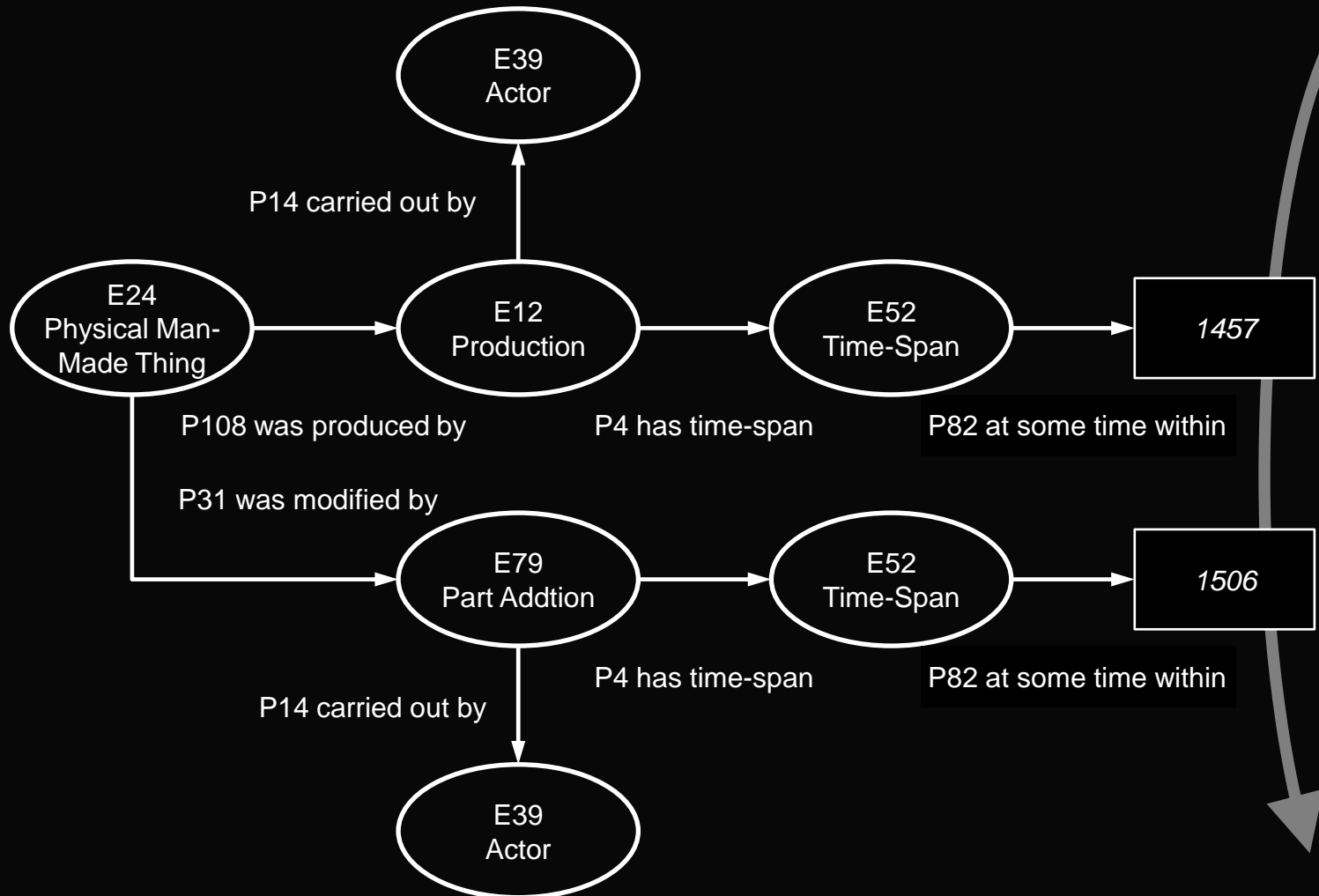








Kokkeling; Schwänzl (2002):  
Expressing Qualified Dublin Core in RDF / XML



Thanks!

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<http://www.gnm.de>

<http://hohmann.io>

<http://erlangen-crm.org>

<http://wiss-ki.eu>